ABSTRACT

Biotinidase deficiency is detected by determining the activity of the biotinidase enzyme utilizing a newborn dried blood spot and colorimetric end point analysis. The four mutations most commonly associated with complete biotinidase deficiency are G98: d7i3, Q456H, R538C, and the double mutation D444H:A171T. Partial biotinidase deficiency is almost universally attributed to the D444H mutation. To more effectively distinguish between profound and partial biotinidase deficiency, a panel of assays utilizing real time PCR and melting curve analysis is developed to detect those mutations listed above. In newborn screening for biotinidase deficiency, the analysis of common mutations is useful to distinguish between partial and complete enzyme deficiency. Combining biotinidase enzyme analysis with genotypic data also increases the sensitivity of screening for biotinidase deficiency and provides information useful to clinicians earlier than would otherwise be possible.